as much as the time at my disposal would allow at four places — Bay of Islands on or near the west coast, St. John's on the extreme east coast, and at Norris Arm and Grand Falls between, and I found this blackberry at all of these places except Bay of Islands. But on July 10, 1910, Professors Fernald and Wiegand found at Goose Pond in the valley of the Humber River, seventy miles east of Bay of Islands what appears to be the same form having large flowers with wide petals, but the new canes were not sufficiently advanced to show the expected division of the broad middle leaflet into three.

Blackberries as I expected were not common and the inhabitants seemed to have never seen them. In two cases where persons were sure no such plants existed, I showed them the plants were close by — in one case a few rods from where a farmer was hoeing and in another close to a woman's house.

WESTMINSTER, VERMONT.

POPULUS VIRGINIANA FOUGER.

IVAR TIDESTROM.

IN Maryland and Virginia there appear to be two distinct forms of black poplar which are at present referred to *Populus deltoides*. These are a form that is usually cultivated as *P. deltoides* Marsh. and *P. virginiana* Fouger. The former is commonly cultivated but up to the present time I have not been able to find any trees in the wild state, although it appears as if some about Newark, Delaware, might be so. At any rate the identity of *Populus deltoides* Marsh. is uncertain. According to Marshall[1] the tree grows naturally in Carolina and Florida, but his description seems to apply to the trees in Delaware. His description appears to have been taken from "Bartram's Catalogue" and he gives due credit to the latter author. The description reads in part as follows: "The leaves are large, generally nearly triangular, toothed or indented with sharp and deep serrations, of a shining full green on their upper surface, but somewhat lighter or hoary underneath; standing upon long slender foot-stalks, and generally restless or in motion."

[1] Arbustum Americanum, p. 106.

Any one who has travelled in Delaware or portions of Maryland, where poplars are usually found planted about farm houses, might readily have observed these majestic trees with large and spreading branches and broad crowns. Perhaps Marshall described a cultivated tree of his own region, but not knowing its origin, and thinking it the same as Bartram's *P. deltoides*, ascribed it to Carolina and Florida.

Schneider [1] cites *Populus marilandica* Poiret [2] as a synonym of *P. deltoides*. The description, however, is not sufficient to identify the species of Poiret, since nothing is said about the leaves on the new growth, which differ both in form and size from those of the branches. In our concept of species, particularly where we deal with the *Salicaceae*, and for that matter with some groups outside of this family, it is absolutely necessary to take account of the new growth.

In Europe where many of our American poplars have been cultivated for more than a century, traditions have aided in the clearing up of the species and their synonymy. Ascherson and Graebner [3] have two forms, "subspecies," under their aggregate (Gesammtart) *Populus canadensis*. The first appears under this name while the second is held to be *Populus virginiana* Fougeroux. They describe the leaves of *P. canadensis* as follows: "Blätter aus kaum herzförmigem, geradem, oder meist kurz keilförmigem Grunde, breit-eiförmig bis fast rhombisch, zugespitzt, am Rande ziemlich regelmässig gesägt, die unteren der Aeste am Grunde vorgezogen, der Vorsprung am Blattstiel meist einen rechten Winkel bildend, an der Einfügung des Stieles meist mit 2 Drüsen, alle am Rande oder anliegend behaart, an kräftigen Treiben bis über 1 dm. lang und breit." I take this description to apply to the tree which we know as *P. deltoides*. As Ascherson and Graebner state, the leaves are very variable, but usually somewhat rounded at the base, serrate with incurved teeth and acuminate. The larger leaves of the root-shoots, uppermost branchlets, etc., are truncate at the base and acute,— thus somewhat "deltoid." The petioles of both forms are usually equal in length to or longer than the leaf-blade. A good illustration of the ordinary leaf-form is given in Bailey's Cyclopedia **5**: 1410, f. 1913, while the larger form is given under f. 1912. *Populus deltoides* is a pyramidal tree when young but when older, and particularly when free to expand, it be-

[1] Illustr. Handb. Laubh. **1**: 7, 1906.
[2] Lam. Enc. Suppl. **4**: 378, 1816.
[3] Syn. Mitteleurop. Flora **4**: 33, 1908.

comes a larger tree with spreading branches. (The same statement might be made with respect to other species of Populus, except *Populus nigra italica* and *P. alba Bolleana* which are naturally fastigiate forms.) I have only seen staminate trees of *P. deltoides* in our region. The aments are well illustrated in Professor Sargent's magnificent work.[1] The anthers are described as being red, which statement agrees with my observations. In or about Washington the trees flowered this year about April 7, two weeks later than in ordinary seasons.

The other "subspecies" of Ascherson and Graebner's treatment, is apparently native of this region. Its entire range is unknown at present. Typical leaves of this species are illustrated by Schneider under *P. monilifera,* from which it may not differ in any particular except possibly in varietal characters. It was only upon the authority of the early botanists that I ventured [2] to identify our native tree with *P. virginiana* Fougeroux. If any species is entitled to this name it is certainly this one, which is the only apparently native black poplar of Virginia. It is readily recognized by its leaves. These are almost always somewhat cordate. (See the text figure.) Not only in the form of the leaves do the two species differ. Their flowering seasons are about two weeks apart in our region. Another feature is that the anthers in *P. virginiana* are yellow, while in *P. deltoides,* as stated above, they are red.

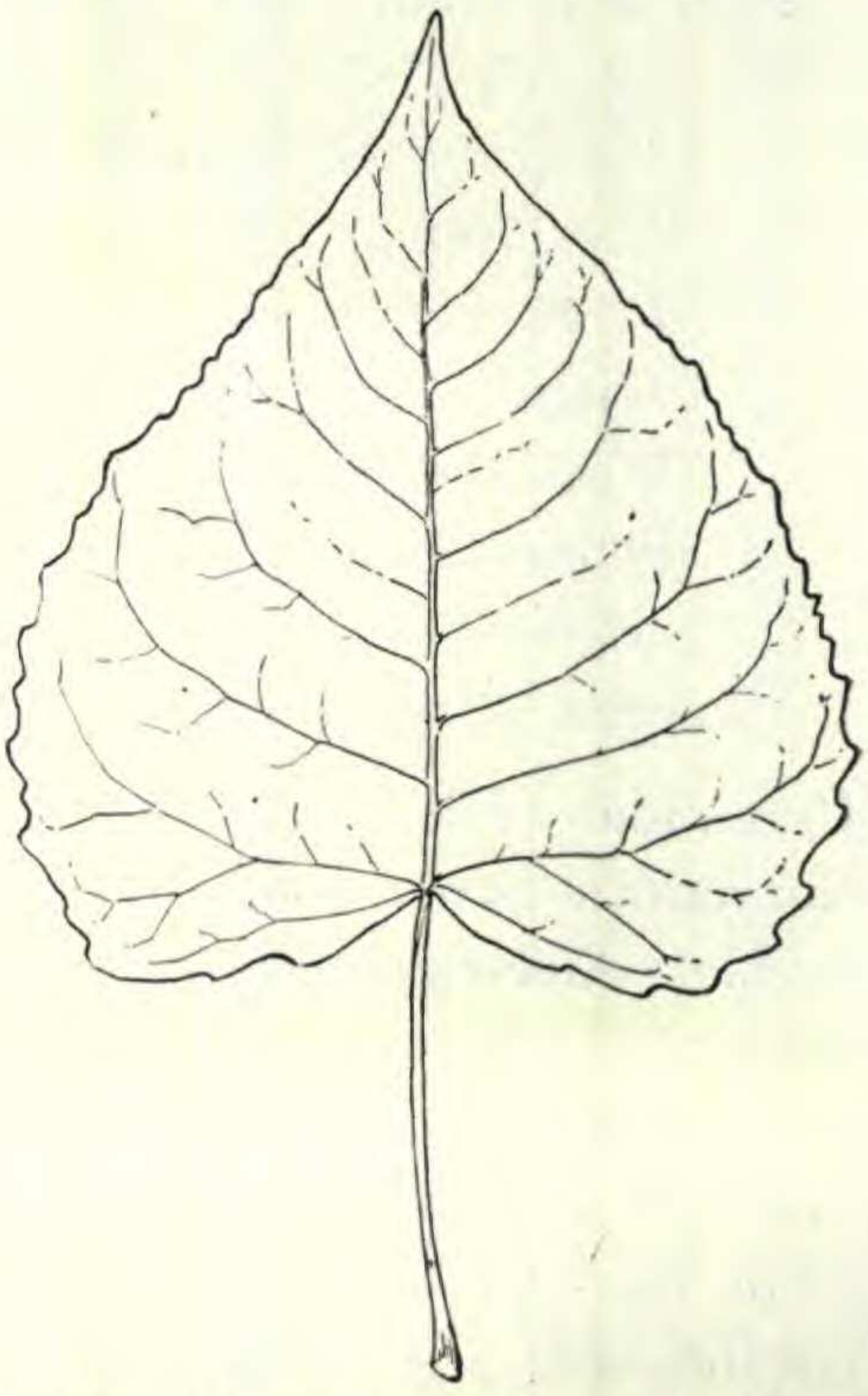


Fig 1. Populus virginiana. Leaf × ½, showing characteristic form of base.

Populus virginiana flowered this year about April 20, just thirteen days after *P. deltoides,* and it was indeed a pleasant sight to see the golden aments. The trees from which I collected my specimens

[1] Silva of N. Am. **9**: 179.
[2] Elysium Marianum **3**: 16, t. 3, f. B, 1910.

(No. 4475) are located near the Glen Echo lock of the Chesapeake and Ohio canal along the Potomac River. They are the very trees upon which the record of *Aigeiros virginiana* in Maryland was based. At the time I re-established this species I had never seen the tree in flower. Since that time my friend, Mr. Bartlett, has observed a number of trees along the Virginia shore of the Potomac River, some ten miles above Washington.

A synopsis of our black poplars and their synonymy may be given as follows:

Leaves of a cordate type.

POPULUS VIRGINIANA Fouger. Mem. Soc. Agr. Par. 1786: 87, 1787.

P. nigra β virginiana Castigl. Viaggio negli Stati Uniti **2**: 334, 1790.

P. monilifera Ait. Hort. Kew. **3**: 406, 1789?

Michx. f. Hist. Arb. **3**: 295, t. 10, f. 2, 1813.

Watson, Dendr. Brit. **2**: t. 102, 1825 (typical leaves).

Schneider, l. c. f. 1: a–c, f. 3; n–n^2.

Aigeiros virginiana Tm. Elys. Mar. **3**: 16, t. 3, f. B. 1910.

Virginian Black Poplar.

Pyramidal (when young), with spreading stout branches and a broad crown (when old): bark ashy-gray with a tinge of yellow; branchlets olive-colored or light-brown; buds light-brown, acuminate, scales ovate with a whitish margin, mucronate; leaves on somewhat reddish petioles, mostly cordate (1 dm. in length and fully as broad) acuminate, glabrous or nearly so on the upper face, sparingly pubescent on the lower face, *margins pubescent*, crenate-serrate from within 2 cm. on each side of the petiole to within the same distance of the apex; staminate aments 1 dm. or less in length, scales laciniate, caducous; flowers on pedicles 5 mm. more or less in length; stamens about 30 in number, anthers yellow; fruiting aments 1 dm. or more in length.

In *P. virginiana* the leaf-margin on each side of the petiole is nearly straight and entire: where it meets the petiole it forms an angle of about 120°, as shown in the illustration.

Castiglioni (l. c.) held the Virginian poplar to be a variety of the black poplar of Europe, possibly on account of the dark green color of the leaves. That he regarded it identical with *Populus virginiana* Fouger. is evident from the following extract:

"Così il Pioppo nero della *Virginia* (*Spec.* I. *var.* β) sembrami una varietà del Pioppo nero d'Europa, benchè il Sig. *Fougeroux de Bondaroy* nelle Memorie della Società d'Agricoltura, che si stampano a Parigi, ne formi una nuova specie. Quest' albero s'innalza a settanta, ed ottanta piedi formando una cima rotonda, le sue foglie sono sostenute da lunghi picciuoli spesso tinti di rosso, e sono quasi a figura di cuore, scannellate al margine, e liscie da ambe le parti . . . ."

Leaves of an ovate type.

Populus deltoides Bartr., Marsh. l. c.?

P. canadensis Moench, Weisenst. 81, 1785; Asch. & Graebn. Syn. **4**: 33, 1908.

? P. marilandica Bosc; Poir. in Lam. Enc. Suppl. **4**: 375, 1816.

Aigeiros deltoides Tm. l. c.

Similar in stature and form to the preceding: branchlets smooth, yellowish-brown: buds dark olive-brown, pointed; normal leaves 8–10 cm. in length, deltoid-ovate, base rounded; crenate-serrate to within 1 cm. of the apex; leaves of the root-shoots and uppermost branchlets 15 cm., more or less, in length, and as wide, base truncate: staminate aments about 1 dm. in length; stamens about 40, anthers dark red.

It is to be hoped that local botanists will take up the study of their native poplars so that we may know at least as much about our trees as is known in Europe. Concepts based on herbarium specimens alone often tend more to confuse than illuminate.

Bureau of Plant Industry, Washington, D. C.

ON GYNODIOECISM IN PLANTAGO LANCEOLATA.

Harley Harris Bartlett.

In 1879 Franz Ludwig[1] published an account of the forms of the flower in *Plantago lanceolata,* in connection with a general discussion

[1] F. Ludwig: Ueber die Blütenformen von *Plantago lanceolata* L. und die Erscheinung der Gynodiöcie. Zeitschr. für die gesammten Naturwissenschaften, lii (1879), p. 441. Review in Bot. Centralb. i (1880), p. 331.